

January 10, 1953

Dear Aaron:

Esther asks me to thank you for the X-rayed material, which arrived this morning. She will let you know the results when she gets them.

Ran across another reference you may want --if you don't already have it. Rahn and Richardson, J. Bact. 41:225 (1941) have a good deal to say about oxygen requirements of *E. coli*. I don't know how airtight this work is.

Didn't mean to preoccupy you with guessing games. UV'd PLT22 does 666 protect against the lytic variant phage, 22V. I had more or less hoped to see whether there were not some recombination between the UV'd 22 and the active 22V such as might lead to lysogenization. But it didn't work. It might have been a model for how other bacteria modify phages by which they are attacked and make them appear "temperate".

PLT22 (from typhimurium) shows an interesting host adaptation. It has an eop on paratyphi B of ca.  $10^{-7}$  (referred to typhimurium). The adapted phage has a relative eop of about  $10^{-2}$ . When this phage is re-adapted to typhimurium, the eop again falls, but only to  $10^{-4}$ . The lytic variant, 22V shows the same pattern. This would suggest two aspects to the host-induced adaptation: a) a phenotypic modification and b) an irreversible mutation as well. The latter is needed to account for the reduced spread ( $10^{-4}$  vs.  $10^{-7}$ ) of the re-adapted phage. This sort of thing might well be predicatable, and has to be looked out for. Anderson & Felix reported much the same thing for typhi VI phages in a recent paper in Nature. They were evidently unacquainted with phenotypic mixing, but I had occasion to write Felix at length on other matters and mentioned this to him.

Sincerely,

Joshua Lederberg